NIKO-SEM

N-Channel Enhancement Mode Field Effect Transistor

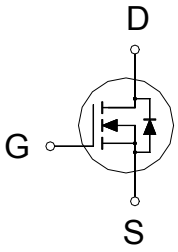
PE606BA

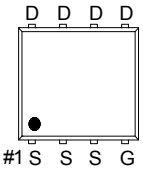
PDFN 3x3P

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D[3]
30V	18mΩ	23A





G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current[3]	T_C = 25 °C	I_D	23	A
	T_C = 100 °C		15	
Continuous Drain Current[3]	T_A = 25 °C		10.6	
	T_A = 70 °C		8.5	
Pulsed Drain Current[1]		I_{DM}	60	
Avalanche Current		I_{AS}	12.6	
Avalanche Energy	L = 0.1mH	E_{AS}	7.9	mJ
Power Dissipation	T_C = 25 °C	P_D	17	W
	T_C = 100 °C		7	
Power Dissipation[4]	T_A = 25 °C		3.5	
	T_A = 70 °C		2.2	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient[2]	t ≦10s	$R_{\theta JA}$		35	°C / W
Junction-to-Ambient[2]	Steady-State	$R_{\theta JA}$		70	
Junction-to-Case	Steady-State	$R_{\theta JC}$		7	

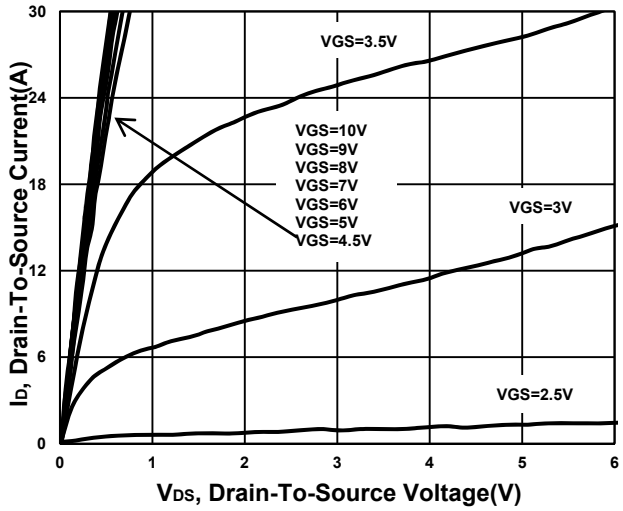
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.
[3]Package limitation current is 11A
[4]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

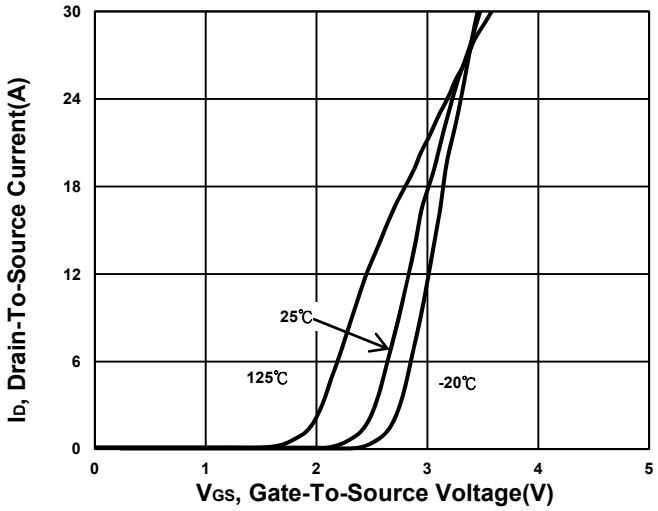
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.3	1.75	2.3	V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V			1	μA
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C			10	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 6A		19	27	mΩ
		V_{GS} = 10V, I_D = 7A		13	18	mΩ
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 7A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz		333		pF
Output Capacitance	C_{oss}			64		pF
Reverse Transfer Capacitance	C_{rss}			43		pF
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		2		Ω
Total Gate Charge[2]	$Q_{g(VGS=10V)}$	V_{DS} = 15V , I_D = 7A		7.5		nC
	$Q_{g(VGS=4.5V)}$			4.3		nC
Gate-Source Charge[2]	Q_{gs}			1.1		nC
Gate-Drain Charge[2]	Q_{gd}			2.3		nC
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 15V I_D ≅ 7A, V_{GEN} = 10V, R_G =6Ω		17		nS
Rise Time[2]	t_r			17		nS
Turn-Off Delay Time[2]	$t_{d(off)}$			37		nS
Fall Time[2]	t_f			18		nS
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current[3]	I_S				15	A
Forward Voltage[1]	V_{SD}	I_F = 7A, V_{GS} = 0V			1.1	V
Reverse Recovery Time	t_{rr}	I_F = 7A , dI_F/dt = 100A / μS		8.4		nS
Reverse Recovery Charge	Q_{rr}			2.2		nC

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is 11A

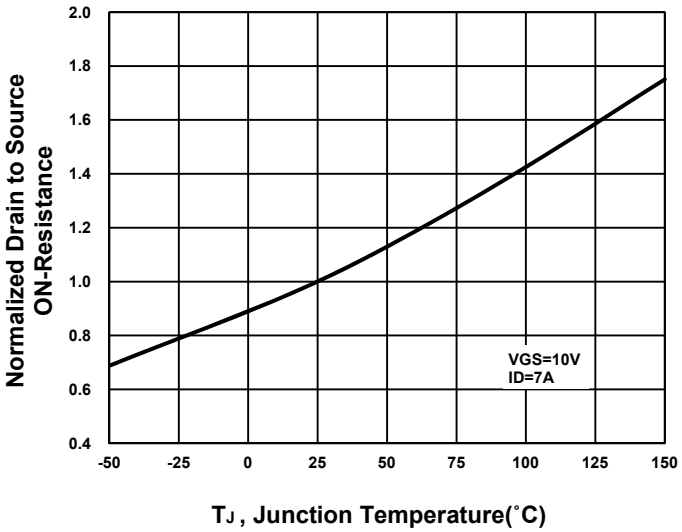
Output Characteristics



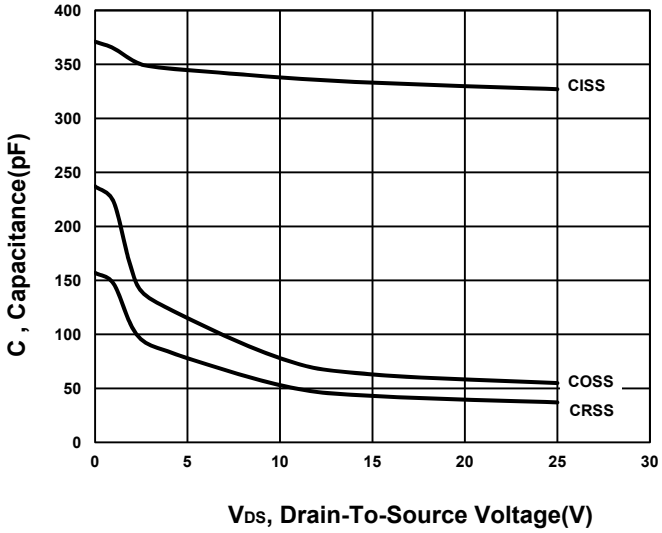
Transfer Characteristics



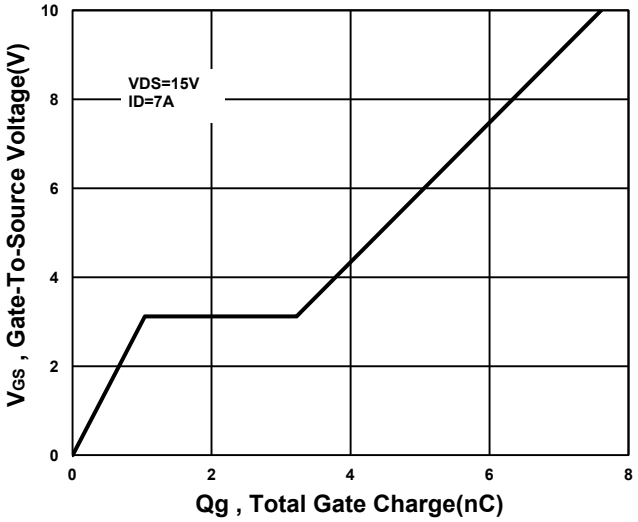
On-Resistance VS Temperature



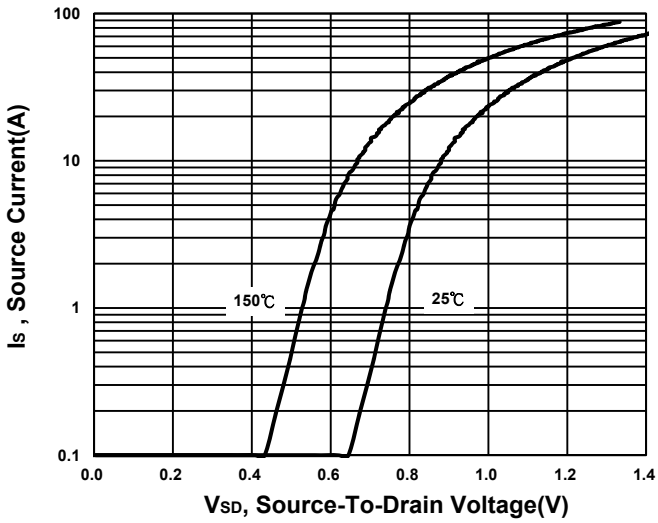
Capacitance Characteristic



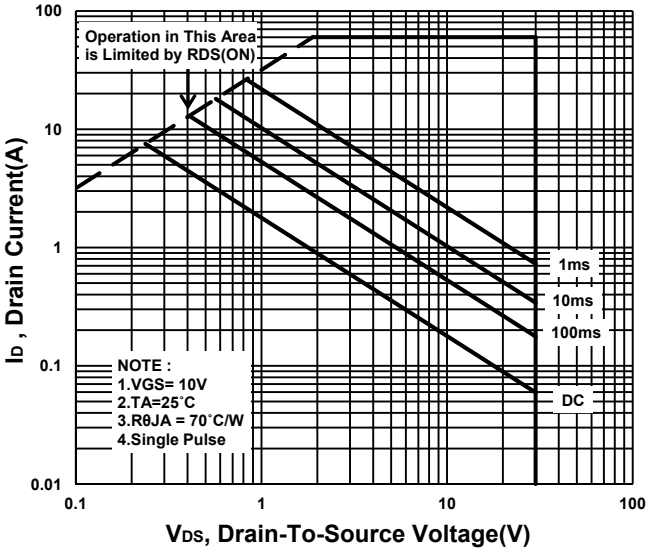
Gate charge Characteristics



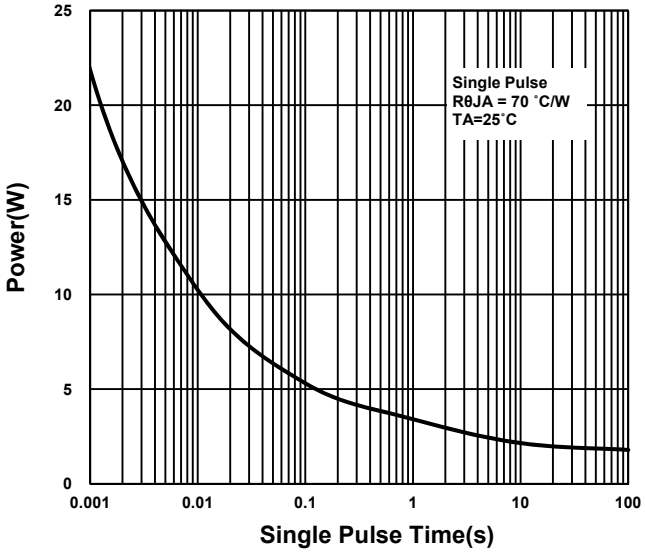
Source-Drain Diode Forward Voltage



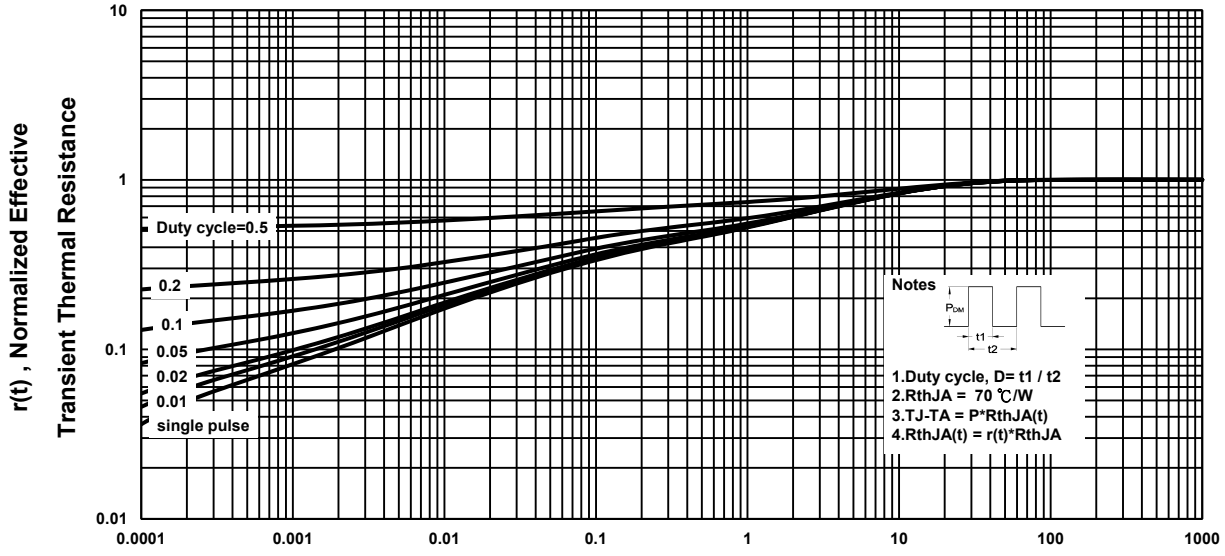
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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